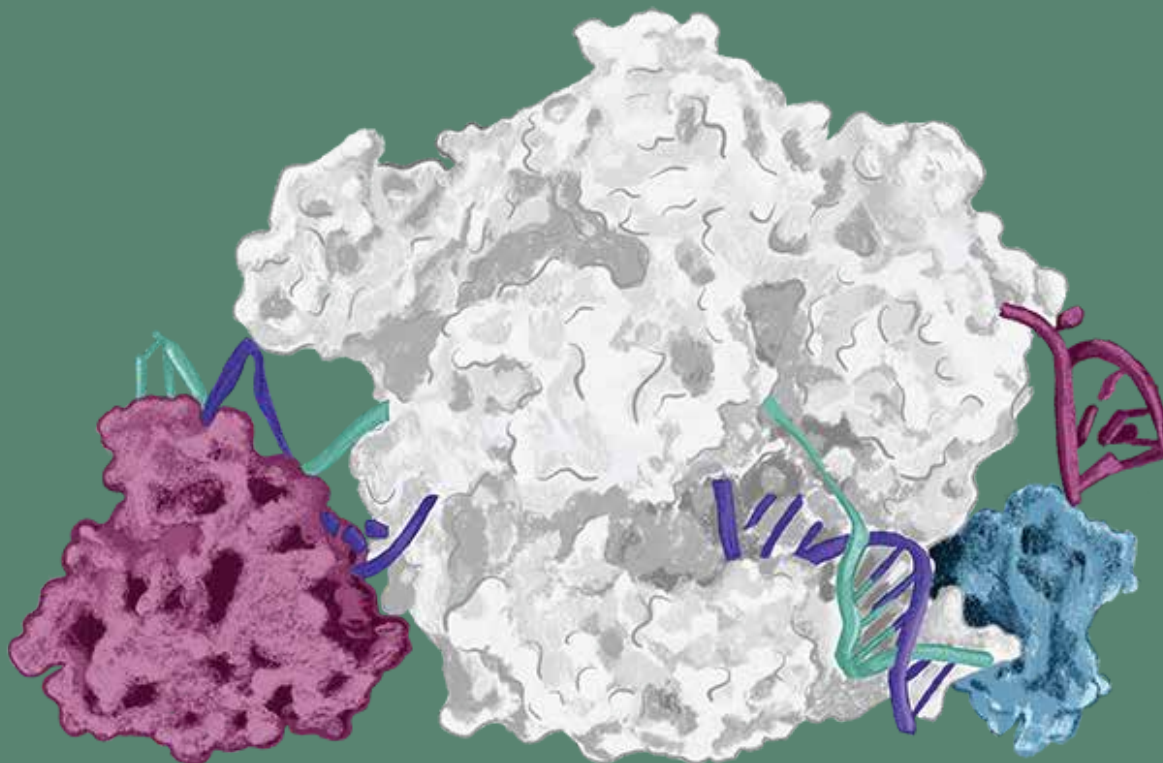




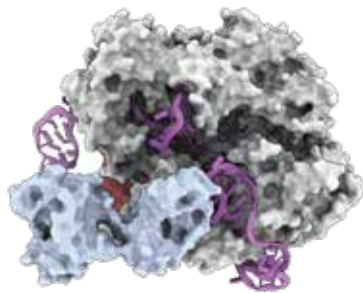
AccuBase™ Cytosine Base Editor

GMP-Grade & Research-Grade

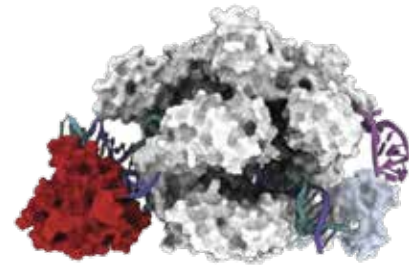


About AccuBase™ Base Editor

AccuBase™ is a cytosine base editor engineered by Base Therapeutics and manufactured for commercialization by KACTUS. It creatively embeds a deaminase inside the Cas protein to prevent random binding of deaminase to non-target sites, significantly reducing off-target occurrence while still maintaining high editing efficiency. is a cytosine base editor which can convert a C-G base pair into a T-A base pair.



Non-editing Stage



Base-editing Stage

Figure 1. Structural image of AccuBase™ in non-editing state and base-editing state.

After forming a ribonucleoprotein (RNP) with sgRNA, the AccuBase™ protein remains in a non-editing state before binding to the target DNA (Figure above, left). The deaminase is encapsulated inside the Cas9n protein and does not interact with any non-target DNA, thus significantly reduces the risk of off-target effects.

When the RNP binds to the target DNA, the conformation of AccuBase™ changes, leading to the exposure of deaminase domain and effectively editing bases within the 3-12 window range of the target site (with the first position being the farthest from the PAM) (Figure above, right).

How does AccuBase™ Base Editor work?

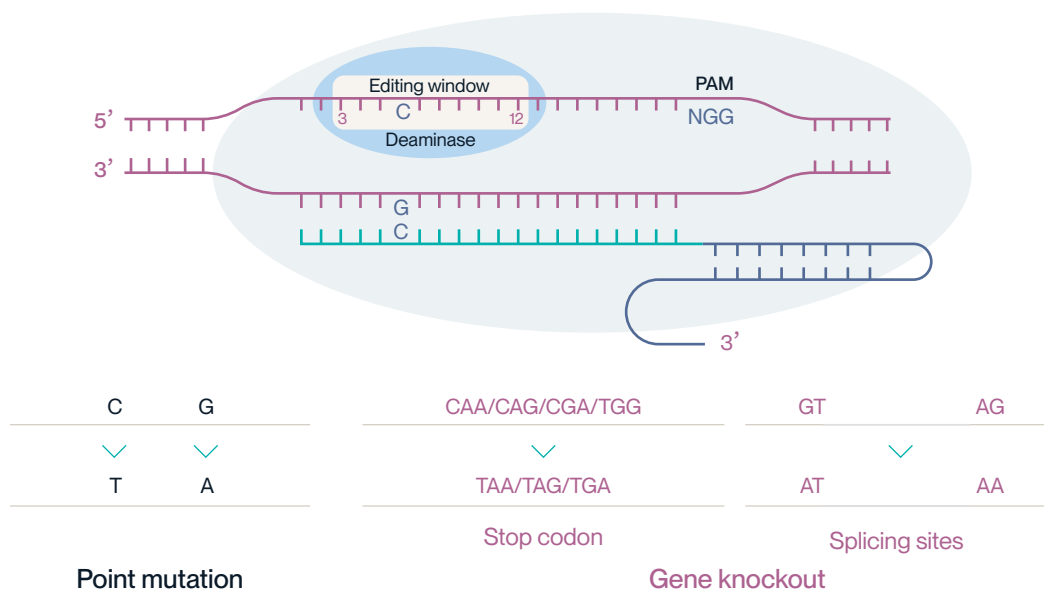


Figure 2. AccuBase™ mechanism of action.

AccuBase™ Base Editor is ideally suited for:



Precise Gene Correction:

Correcting single point mutations to restore normal gene function.



Targeted Gene Knockout:

Silencing gene expression by introducing stop codons or disrupting splice sites.



Multi-locus Editing and Compatibility:

Editing multiple genes simultaneously. AccuBase™ can also be combined with other gene editing tools.

GMP Compliance

Product Specifications

Parameter	Specification
Express System	E. Coli
Concentration	10mg/ml
Molecular Weight	210.14kDa
Form	Liquid
Storage Buffer	30 mM Tris, 300 mM NaCl, 0.1 mM EDTA, 1 mM DTT, 50% Glycerol, pH8.0
Storage	Store at -80 ±10°C

Regulatory Documentation

AccuBase™, GMP-Grade (GMP-KD-0001) comes with customizable regulatory documentation including Data Sheet, MSDS, COA, TSE/BSE statement, CoO. KACTUS has a comprehensive documentation system including a digital quality management system, specification program, criteria support documents, and quality reports. Our product release process involves 15+ contaminant detection steps, 30+ quality tests, 4+ report reviews, and 4+ product release checkpoints. We can customize your documentation package based on relevant regulatory filings.

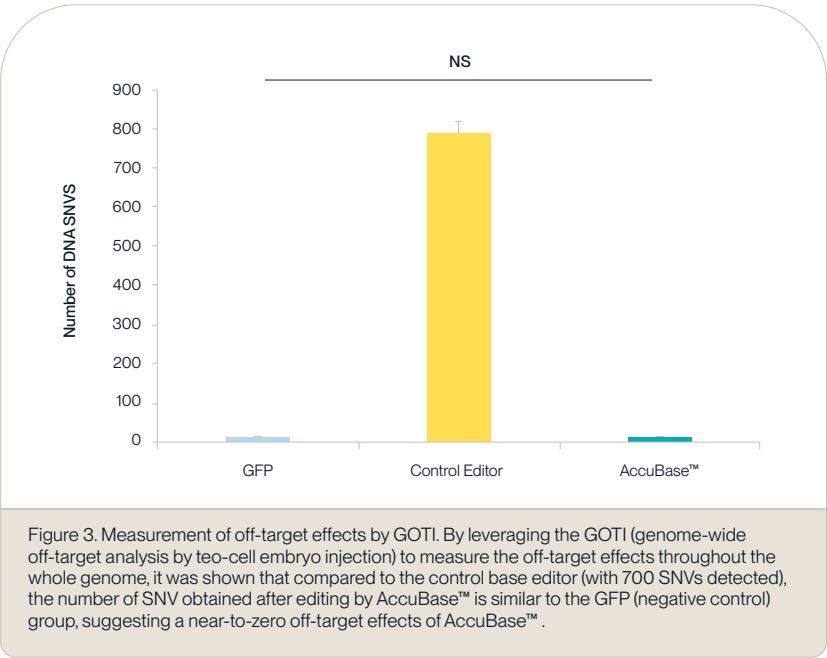
Quality Specifications for AccuBase™

AccuBase™, GMP-Grade (GMP-KD-0001) is manufactured according to cGMP guidelines in our 10,000m2 manufacturing facility and undergoes the following quality release testing.

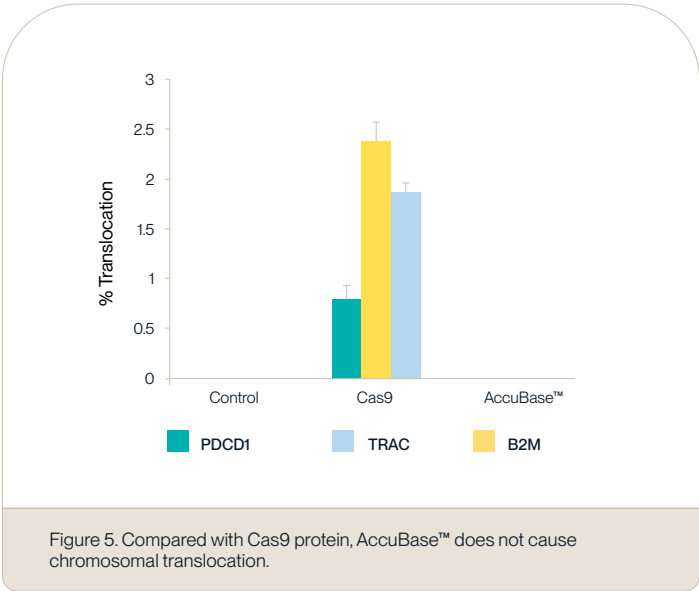
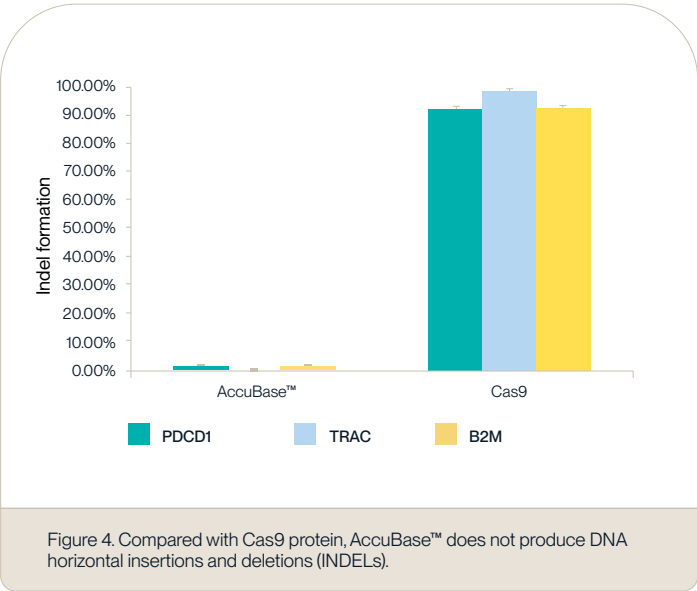
Parameter	Acceptance Criteria
pH	8.0±0.5
Concentration	9.0-11.0mg/mL
Purity (electrophoresis)	≥ 80.0%
Purity (RP-HPLC)	≥ 88.0%
Purity (SEC-HPLC)	≥ 80.0%
Residual DNase	Sample/Control ≤ 3.0
Residual RNase	Sample/Control ≤ 3.0
Residual Host Cell Protein	≤ 100.0ng/mL
Residual Host Cell DNA	≤ 200.0ng/mL
Endotoxin	≤ 10.0EU/mg
Sterility	Negative
Mycoplasma	Negative

Why choose AccuBase™ Base Editor?

Near-Zero Off-Target Event Measurement

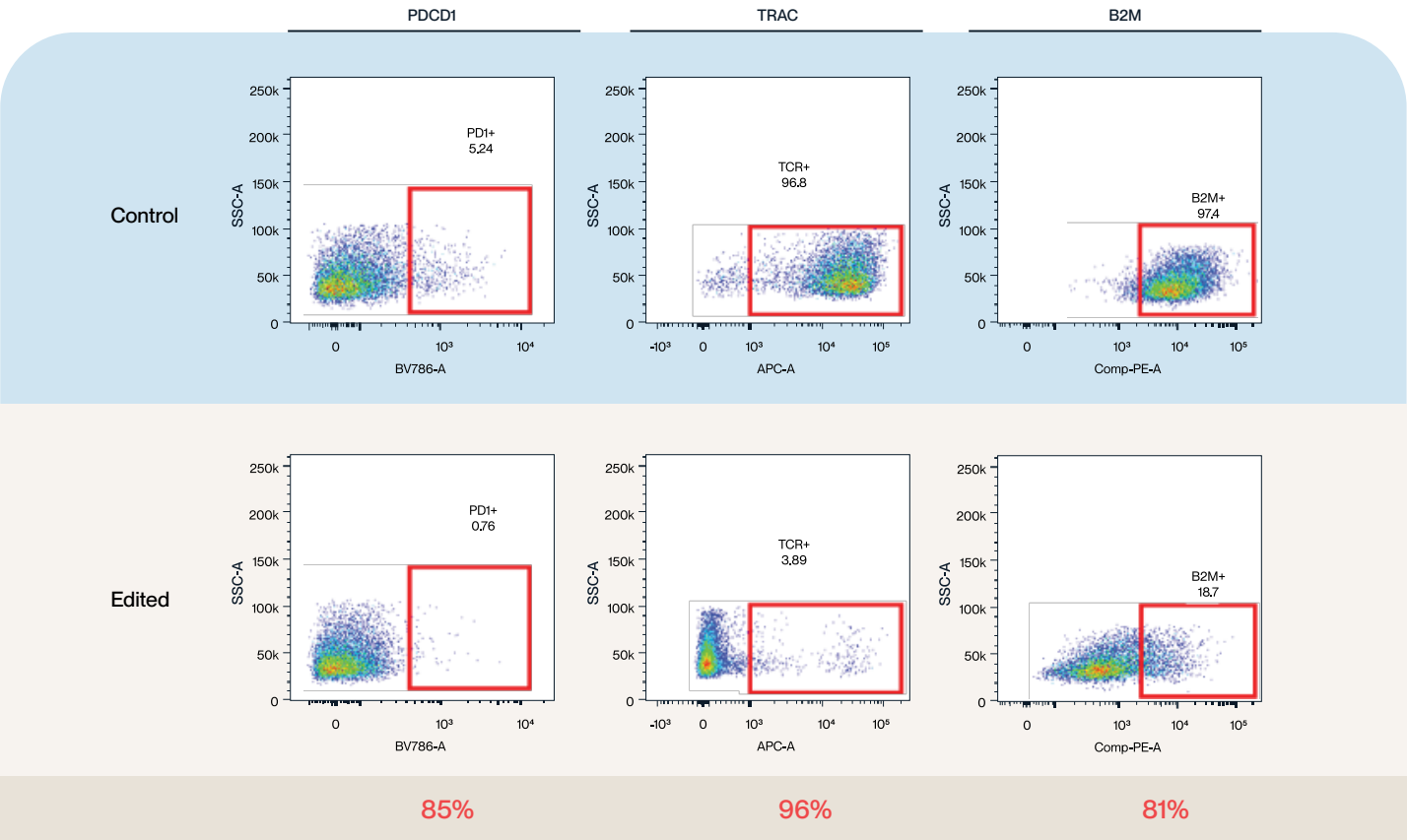


Avoids creation of INDELs and chromosomal translocation



High Base Editing Activity

Activated Primary T Cells



FACS efficacy %
$$\text{Facs efficacy \%} = (\text{positive control} - \text{KO group}) / \text{positive control} * 100\%$$

Figure 6. AccuBase™ RNP was electroporated into activated primary T cells. According to flow cytometry, AccuBase™ can efficiently knock out PD1, B2M, and TRAC proteins on the membrane of activated primary T cells at the protein level. For PD1 and B2M, the knockout efficiency exceeded 80%, while the knockout efficiency of TRAC reached 96%.

Unactivated Primary T Cells

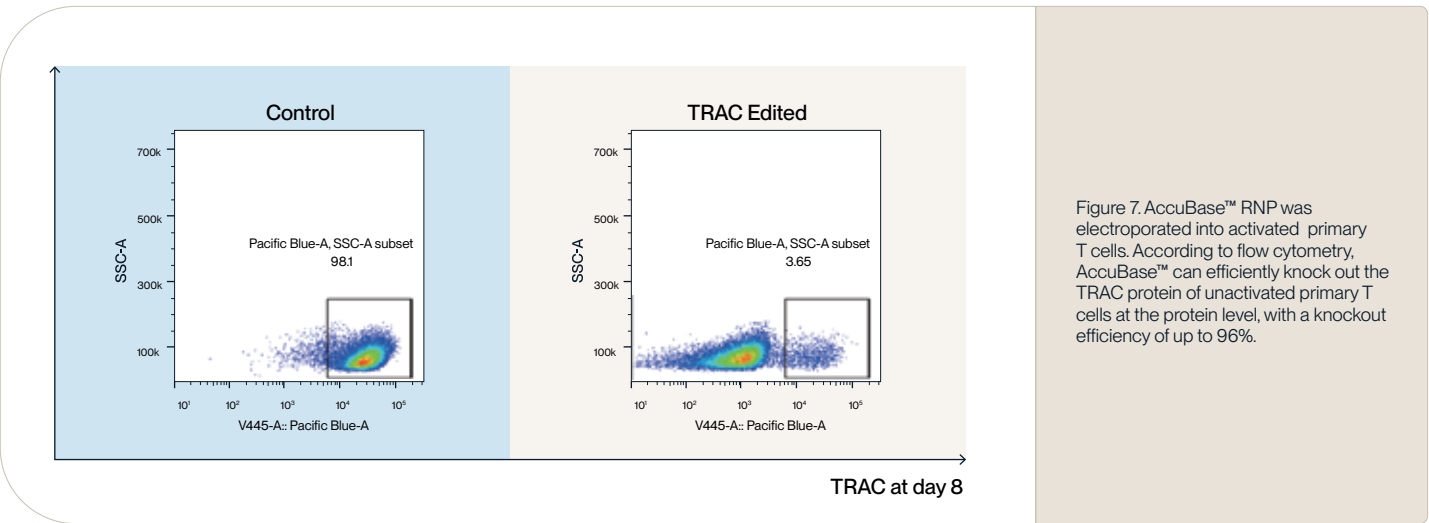


Figure 7. AccuBase™ RNP was electroporated into activated primary T cells. According to flow cytometry, AccuBase™ can efficiently knock out the TRAC protein of unactivated primary T cells at the protein level, with a knockout efficiency of up to 96%.

AccuBase™ Base Editor Features



Manufactured in a GMP-compliant facility



Raw materials free from animal-derived components



High purity, activity, and stability



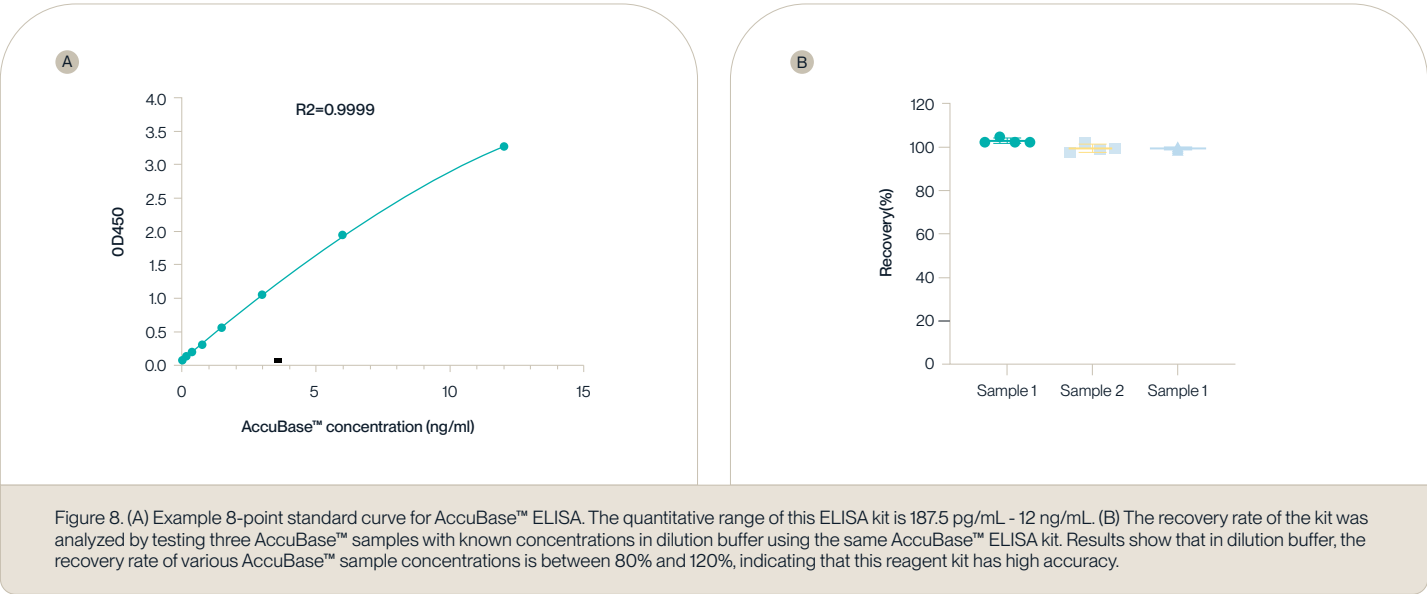
Traceable documentation for regulatory support



Off-the-shelf catalog product

AccuBase™ ELISA Kit

We have developed an AccuBase™ ELISA kit for detection of residual AccuBase™ in samples. The kit uses monoclonal antibodies in a sandwich ELISA and demonstrates high accuracy.



Assay Performance

Detection range:	0.1875ng/ml-12 ng/ml
Sensitivity:	0.1 ng/ml
Accuracy:	CV<10%

Frequently Asked Questions

Product Specifications

Is AccuBase™ manufactured according to GMP guidelines?

Our GMP-Grade AccuBase™ (#GMP-KD-0001) is always manufactured according to cGMP guidelines. We also offer a research-grade version of AccuBase™ (#KD-0001) that does not undergo GMP quality control testing.

What regulatory documentation is available for GMP-Grade AccuBase™?

AccuBase™, GMP-Grade (#GMP-KD-0001) comes with customizable regulatory documentation including Data Sheet, MSDS, COA, TSE/BSE statement, and CoO. Batch production records, batch inspection records, etc, can also be provided. Please contact us so we can learn more about your specific regulatory filings.

What are the advantages of AccuBase™ over other gene editing enzymes?

Compared to Cas9 and other Cas family gene editing enzymes, AccuBase™ does not cause DNA double-strand breaks, does not require donor DNA, and is not dependent on the cell cycle for precise gene repair. It also does not produce INDELs and thus poses no risk of chromosomal translocations.

Compared to other CBEs (Cytosine Base Editors), its unique structural design allows editing only at the target site, with no random off-target activity, while maintaining high editing efficiency.

What is the difference between research-grade and GMP-grade AccuBase™?

- **Production Environment.** GMP-grade AccuBase™ is produced in our GMP manufacturing facilities, whereas research-grade is produced in non-GMP facilities.
- **Quality Control Testing.** GMP-grade AccuBase™ includes tests for appearance, concentration, purity (2100), purity (SEC-HPLC), purity (RP-HPLC), endotoxin, DNA enzyme residue, RNA enzyme residue, host protein residue, host DNA residue, sterility, and mycoplasma. Research-grade includes concentration, identification (Bis-Tris PAGE), purity (SEC-HPLC), and endotoxin.
- **Regulatory Documentation.** GMP-grade AccuBase™ includes complete method validation, process validation reports, COA, COO, non-animal source statements, stability studies, etc., supporting client project applications. Research-grade includes instruction manuals and COA, not supporting client project applications.
- Both research-grade and GMP-grade have the same bacterial strain origin, same materials used in production, same production process, and consistent protein activity.

Product Usage

Can AccuBase™ Achieve Multi-Gene Knockout?

AccuBase™ can not only achieve single-gene knockout but also simultaneously knock out 2, 3, or more genes.

How do I design sgRNA for AccuBase™?

The single guide RNA (sgRNA) scaffold for AccuBase™ is the same as that used for spCas9. Designing sgRNA for gene knockout with AccuBase™ involves considering editing within the 3-12 position window. A simple approach is to first search for triplet codons CAA (Gln), CAG (Gln), CGA (Arg), or TGG (Trp), and then look for suitable PAMs (NGG) nearby.

Ordering Information

Catalog #	Product Name	Grade	Available Sizes
KD-0001	AccuBase™, BS-EP1, RUO	Research-Grade	200µg / 500µg / 1mg
GMP-KD-0001	AccuBase™, BS-EP1, GMP	GMP-Grade	1mg
RD-K-014	BS-EP1 (AccuBase™) ELISA Kit	For research use only	96 Tests

Note: AccuBase™ is the trade name of BS-EP1.

Request a Quote or More Information

Please contact support@kactusbio.us to request a quote or additional information for our AccuBase™ Base Editor.

One of our team representatives would be happy to speak with you!

